



Presentation By

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on

Audit and Management Responsibilities for

The Paperwork Reduction Act of 1980

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A NEW ERA FOR INFORMATION
MANAGEMENT - SOME ACTIONS PRECEDING THE ACT

BOB Task Force Report Dated December 17, 1971

BOB Project to Improve the ADP System Analysis and Computer Programming Capability of the Federal Government.

--Data should be managed as a resource because it costs money.

--Cited GSA reported ADP costs of \$2.3 billion a year.

"GAO Review" Article of 1973

Cited NARS estimate of \$12.2 billion to operate Federal Information Systems (an incomplete estimate). Appendix V.

Identified, with examples, problems in information management which resulted in unnecessary costs (discussed later).

Commission on Federal Paperwork

Public Law 93-556 in 1974 established the Commission.

--14 member commission, chaired by Representative Frank Horton, examined Federal information gathering, processing, dissemination, management, and control of selected information related activities.

--Reports issued in 1977 with over 770 recommendations.

--Advocated managing information as a resource--in the same way that personnel, property, and dollars are treated--so that information will be planned, budgeted, controlled, and evaluated adequately.

Some Other Actions Leading to Recognition of Need for Act

- (1) GSA studied problems with acquiring, using, and managing computers in the Federal Government and recommended organization and management to improve ADP acquisition, use, and management (ADP Strategy Report) - 1974.
- (2) President's Reorganization Project (PRP), initiated in 1977, studied Federal acquisition, management, and use of information technology. The project identified the need to improve management of information technology so it could be used to

reduce the cost of Government and to develop a total management concept to control all of the Government information resources.

- (3) GAO reports on automatic data processing, paperwork burden and other problems caused by bad information in 1960's to enactment of the Paperwork Reduction Act (see App. I to IV).
- (4) Congressional actions predating Public Law 96-511 showing concern for information policies is evidenced by such legislation as
 - Public Law 89-306 (Brooks Act) 1965
 - Public Law 93-83 (Crime Control Act) 1973
 - Public Law 93-400 (Federal Procurement) 1974
 - Public Law 93-597 (Privacy Act) 1974

SIGNIFICANCE OF FEDERAL INFORMATION COSTS

Significance Not Fully Measured

No accounting mechanism exists for measuring total information costs and its elements.

--Information costs are buried in accounts of

- (1) programs,
- (2) salaries and other personnel costs,
- (3) materials and supplies,
- (4) facilities and equipment,
- (5) other overhead items (travel, training, rent, maintenance, research, contract costs).

--All of these include funds spent for the collection, processing, and use of information.

Estimates of Information Costs

Some estimates made and what they represent:

--\$2.3 Billion - GSA estimate of ADP costs (1972)

--\$12.2 Billion - NARS estimate of Federal Information System operating costs (1973) - Appendix V

Excludes many aspects of information processing (manual systems, managerial and operational users, classified systems, etc.)

--\$43 Billion - Federal Paperwork Commission (1977)

- (1) Federal portion of annual paperwork costs
- (2) Private sector costs estimated at between \$39 to \$50 billion a year

--\$100 Billion or More (1981) - Informal estimate by GAO employee based on ADP costs (\$15 billion), personnel costs (\$50 billion) facilities costs (\$100 billion) etc.

FEDERAL INFORMATION PROBLEMS

Unreliable Information and its Impacts

GAO review of "Automated Decisionmaking" identified Significant Data Problems and Impacts (FGMSD-76-5, dated April 23, 1976)

- (1) Automated decisionmaking initiates actions with no manual review (\$40 billion a year or more). (See appendix VI.)
- (2) Unreliable data a major contributor to incorrect actions. (See Appendix VII).
- (3) Data quality problems contributed to
 - unnecessary purchase and overhaul of aircraft equipment of \$10 million a year (Navy)
 - overpayments of more than \$1 billion (SSA and VA)
 - automatic issue of radioactive material without proper safeguards (Army)
- (4) Causes of data and software problems were identified by more than 200 responses to a GAO questionnaire:
 - causes of data problems included form complexity, inadequate manual reviews, inadequate instructions, workload volumes, etc.; (see Appendix VIII)
 - causes of software problems included inadequate communications, poor documentation, time constraints, detail and complexity, testing deficiencies, etc. (See Appendix IX.)

An ongoing study has identified over 100 GAO reports discussing data quality problems.

- (1) Study shows that data quality is still a problem in the Federal Government (see appendix III and X).
- (2) Study shows that data quality problems can impede agency efforts in meeting mission as well as cause unnecessary costs.

--Failure of military activity to issue available stock to users because of data quality problems.

--Duplicate payments of millions of dollars because of missing and inaccurate data in files (SSA Benefit Payment System For Dependent Children - Report HRD-79-27, dated December 12, 1978).

Information Processing Costs and Problems

Other information processing and management problems create excessive costs, and impede the accomplishment of agency missions.

--1973 article depicted several examples of information processing problems and cited examples of adverse impacts (unnecessary costs)

--GAO reports have repeatedly reported on many of these information processing problems

--Other sources, e.g. Commission on Federal Paperwork, NARS, etc.

Some examples of information processing and management problems observed from the above sources are:

--Collecting data already available (duplication)

- (1) NARS estimated that 25 percent of data collected were already in computer files of other agencies. In 1973 data collection costs were estimated at \$5.2 billion; they are much higher. Duplicative data included water quality (14 agencies) economic indicators, crime, chemicals, narcotics control, and air pollution.
- (2) A GAO report (B-133188, dated 12-08-71) estimated unnecessary costs of \$20 million because two agencies were collecting the same geophysical data (by ship) which could have been collected once and shared.

- (3) Two more recent GAO reports (GGD-77-17, dated 03-17-77 and GGD-79-81, dated 09-07-79) discussed duplications of data in criminal information systems. For example, there were more than 600,000 duplicate files (44 percent) in two systems operated by the FBI. This situation resulted in duplicate input.

--Collecting unneeded data

- (1) The Commission on Federal Paperwork estimated potential savings of \$10 billion when its recommendations for reducing paperwork are implemented. A portion of the savings will be achieved by the elimination of unnecessary data collection via changes in regulation, statistical data sampling, and reductions in the frequency of reporting.

--Inadequate Processing of Pertinent Data

- (1) 1973 Article discusses 1970 report that disclosed problems in the computer processing of valid data because of software criteria problems that distorted the results (B-157373, dated 08-06-70). The Navy purchased parts instead of reclaiming them from excess aircraft because of poor processing criteria (replaceable deteriorative parts, change in demand for parts coded slow moving, etc.). Also, the system was capable of screening only four digits out of a possible five digit quantity field. The effect was unnecessary purchase and erroneously disposed quantities of at least \$1 million in 1 year.
- (2) Because of incorrect software criteria, the Army incurred unnecessary and avoidable transportation and pipeline costs of \$2.3 million a year because the computer issued release of stock from depots for cross country shipment when requisitions could have been satisfied from depots situated closer to the customer. (FGMSD-76-5, dated 04-23-76)
- (3) In both cases the data was current, accurate, and complete and the information needed to make the right decisions were in the files. However, inadequate processing resulted in unnecessary costs to the Government.

--Creating Unnecessary Output

- (1) In 1973 NARS estimated computer output costs at \$1 billion a year. These costs are more now.
- (2) A GAO report issued as far back as 1967 (B-161766, dated June 27, 1967) disclosed that 90 percent of

outputs in an agency duplicated information contained in other reports output by the same agency. This unnecessary output, when considered Department-wide would have amounted to several hundreds of thousands of dollars a year. (Defense Supply Agency)

- (3) A more recent report (FGMSD-80-19, dated January 15, 1980) reported that the Navy needlessly incurs costs to produce standard financial reports that naval personnel do not and cannot use. Just two unusable reports sent to one field activity cost \$15,000.

--Failing to Obtain and Use Needed Data

- (1) The 1973 article cites a 1972 GAO study that showed the Federal Government had spent \$1 million a year unnecessarily for the purchase of drugs because unit price information was not exchanged between DOD, VA, and other Federal agencies.
- (2) On February 4, 1981, GAO reported (HRD-81-4) over-payments of \$125 million were made in 1 year to supplement security income recipients because data about their assets were not obtained. Some of this data was available from another agency and revised data collection procedures were needed. (SSA)

--Other information processing problems

- (1) Storage and/or retrieval deficiencies: Inadequate numbers of communication ports at a data processing center resulted in only 19,035 successful attempts at accessing data from a system out of 249,479 total attempts (in a 1 month period). GAO report CED-81-116, dated June 19, 1981. (Agriculture)
- (2) Operation of obsolete information processing systems: In a report about the use of obsolete computers (AFMD-81-9, dated December 15, 1980) GAO inferred that potential savings in the millions of dollars were possible by replacing older equipment. Dollar savings involved lower operating and maintenance costs, lower energy costs, and reductions in personnel, facility and other costs. Other benefits cited included better reliability, faster speeds, and greater capabilities.
- (3) Voluminous output and poor output design: This was a cause for the failure of a military activity to locate and issue on hand assets for satisfying high priority requisitions. (Army internal audit report)

(4) Other problems:

- (a) uneconomical data collection (best method not used)
- (b) data transmission problems
- (c) emulation
- (d) conversion costs
- (e) system design problems
- (f) excessive manual processing

MANAGING FEDERAL INFORMATION - CONSIDERATIONSPurpose of the Paperwork Reduction Act of 1980

The Paperwork Reduction Act of 1980 is somewhat misnamed.

Paperwork burden on the public places a high cost on the economy in general, individual businesses, public and private institutions, the general public, as well as the Federal Government itself.

Unnecessary paperwork burden is significant and

- is inflationary. Increased costs are passed on to the consumer in the form of higher prices. Unnecessary paperwork requirements increase the cost of goods and services to the consumer.
- is an economic depressant (reduces profit). This occurs when economic conditions like supply and demand, and competition prevent certain businesses from passing on all or even a portion of this added burden to consumers. Net profits are reduced or even wiped out. Paperwork can contribute to business failures, especially small businesses that can't afford high costs.
- can hurt productivity. A very important subject these days. Recordkeeping and reporting activities required by Federal agencies are often unproductive overhead costs to businesses. In times when productivity improvements are needed to effectively compete with foreign competition by making quality products at the lowest possible prices, all nonproductive efforts hurt the U.S. competitive position. Examples of U.S. industries fighting for their lives include automobile, steel, and clothing and textiles. Cutting costs of unnecessary paperwork

can assist these ailing industries by taking the paperwork monkey off their backs.

--increases costs to the taxpayer. Resources expended by Federal, State, and local governments in requiring and collecting unnecessary or duplicative information increases taxpayer costs. The Paperwork Commission estimated that potential first year savings of \$10 billion could be attained by eliminating unnecessary paperwork. Significant further reductions are possible. It is not hard to see that significant savings to the taxpayer are available.

So the paperwork reduction aspect of the act is important.

But there is much more.

The act requires OMB and the agencies to take certain steps to manage information resources effectively. GAO believes that such requirements as performing research on information processing, developing and issuing management policy, establishing an agency senior official as responsible and accountable for effective management, and performing oversight reviews and evaluations for self evaluation of actions taken under the act, are all significant management considerations.

A discussion of these and other management considerations arising from the Paperwork Reduction Act follows.

Responsibilities for Federal Information Management Policy

The act is the first piece of legislation that deals with the need for comprehensive management of information and related resources within the Federal Government on a broad and integrated scale.

Because information costs could be in the hundreds of billions of dollars, information management criteria and policy are needed and are required by the act. OMB is responsible for policy.

The act requires that research be planned and performed by OMB on Federal collection, processing, storage, transmission and use of information.

We see this research to be necessary and important because integrated information management policies and procedures do not currently exist.

Criteria for effective policy development should be based on studies of the entire information cycle spectrum from collection through use and disposition.

Policy and procedures must apply to all the significant activities and must be actively implemented for effective and economical management of information and related resources.

Right now, words such as information management and other terms such as information resources management, data vs information, etc., need to be defined and become accepted to mean the same thing to all who must work in the area.

The Agency Senior Official

Agency heads are responsible for designating a senior official for carrying out the agency responsibilities under the act including assuring

- that information activities are being carried in an efficient, effective, and economical manner;
- compliance with information policies, principles, standards and guidelines that are prescribed by OMB.

There are certain management related considerations involved in the selection, placement and role of the senior official in an agency. Questions that should be asked include:

- Is the senior official knowledgeable and capable of performing in an information management environment? Does he understand the many existing information technologies (ADP, word processing, telecommunications, video disk, etc.)?
- Where is the senior official placed organizationally? Is he sufficiently independent and does he have the authority to act?
- Is he responsible for both staff (policy) and line (operations) functions? Should he be?
- Is he responsible for reviewing the systems that he is responsible for designing and operating? Should he be?
- Is there a clear delineation of responsibility and accountability?
- Does the senior official have a direct line of communications with the agency head?
- Is management demonstrating the commitment needed to make the senior official concept work?
- Is the senior official being provided sufficient resources for accomplishing his mission? Are his resources adequately

trained and capable? Does he have sufficient resources to meet his responsibilities?

One point about resources. Despite the call for an overall cut in Federal personnel, GAO firmly believes that effective resources allocated for information management will be more than offset by short and long term reductions in information processing costs?

--An example of potential savings possible through improved management would be an expansion of the use of the automated decisionmaking concept. This can't be done until highly reliable information and application software exists.

Audit and Evaluation

The words audit, evaluate, and review are similar in that they represent an oversight function, defined as being "under supervision and watchful care." Oversight type provisions are presented in four sections of the act (3504/OMB, 3505/OMB, 3506/Senior Official, 3513/OMB).

GAO sees these provisions as a perpetual self evaluation of how well the act is being carried out. Done properly, those responsible could determine whether the purposes of the act are being effectively carried out, whether intended improvements are being achieved, and whether net savings (overall cost cutting) are being realized.

Information management in today's environment involves, to a large degree, new, complex and growing technologies, including microelectronics (used in computer systems), intelligent terminals, office automation equipment, video disks, computer graphics, as well as the major computer systems used by the Government.

We see a need to apply the proper kinds of resources (with appropriate training, background and experience) to this oversight function. GAO has noted problems in the past with agency audits and reviews of computer systems. The problem is still with us.

On September 28, 1977, GAO issued a report entitled "Computer Auditing in the Executive Departments: Not Enough Is Being Done" (Report FGMSD-77-82). In the report, we noted that although Federal agencies spend billions on computer systems, audit organizations have avoided computer-related work. This was occurring despite the fact that the audit function is recognized as an effective management tool. The study showed that a single effective audit can save the Government millions of dollars. Visits to 12 internal audit organizations were the basis for the findings in that report. One of the key recommendations was to obtain the resources with necessary technical ADP knowledge (either by training and/or hiring). Many of our previous reports called for increased attention to the audit of this technology.

A followup study was recently completed by GAO, which involved 19 Federal Inspector General and internal audit organizations (including the original 12) in the agencies accounting for 90 percent of the computers in the Government. This study has shown that while some actions have been taken, much still needs to be done because of inadequate audit coverage. A persistent problem is that many agencies have not developed and maintained skilled computer audit staff necessary to meet ADP audit responsibilities. Further, there is only limited compliance with standards issued by the Comptroller General of the United States for auditing computer-based systems. In some cases there is no compliance.

Causes for the continuing problems in ADP audit coverage included (1) lack of management support, (2) personnel hiring and ceiling restrictions, and (3) an absence of formal training to help develop necessary skills. The need for expertise is even greater today than in 1977 because of the advancement of this technology.

These studies on the Government's ADP audit capabilities are important and directly related to the Paperwork Reduction Act oversight functions. The act discusses the need for effective use of ADP and specifically makes it a major target for better management in order to improve service delivery, increase productivity and to reduce waste and costs. In addition, it incorporates the need for management attention to other information technologies such as telecommunications and all resources used in information collection, processing, and use. The oversight provisions of this act will therefore require, more than ever before, the beefing up of the capabilities of the Federal Government for audit and review of information technology. Without this, these oversight provisions will not work.

We also see the development of methodologies for evaluating and reviewing information resources and technologies as being part of the "research" provision of the act under OMB responsibilities. Evaluating and reviewing the management of information technology is one of the challenges of the future.

Role of the General Accounting Office

GAO Is An Independent Arm of Congress
Concerned With Economy, Efficiency,
and Effectiveness of Government:

The General Accounting Office was created by Congress in 1921 (31 U.S.C. 53, 54) along with the Bureau of Budget (now OMB).

The Comptroller General is appointed by the President with the advice and consent of the Senate for a 15-year period, removable only by impeachment or joint congressional resolution for specific cause. He can't succeed himself.

GAO is intended to be a nonpolitical, independent arm of Congress to help assure that Federal programs and operations are carried out in an efficient, economical, and effective manner and that programs are meeting stated objectives.

GAO responds to request from Congress as a whole, from committee chairmen, and from individual members.

Equally important, GAO initiates its own studies and reviews based on its observations, knowledge of legislative and executive requirements, and prior reviews. GAO reports to Congress, agencies and the public, significant problems and how they can be solved.

GAO has been involved in many studies of problems related to information and information resources management (see app. I to IV for examples) in the past.

GAO Played a Role in Assisting Congress in Enacting the Paperwork Reduction Act of 1980:

Background information essential to understanding GAO's strong commitment to the principles contained in the act is presented here.

In October 1975, under the leadership of Congressman Frank Horton, the bipartisan Commission on Federal Paperwork began a 2-year study with the objective of "identifying the root causes of paperwork burdens" (quoting Congressman Horton).

GAO was heavily involved in the commission's efforts by virtue of the Comptroller General's membership.

After the commission's work was completed, Congressman Horton and Mr. Staats (GAO's then Comptroller General) agreed that GAO staff would help draft legislation to implement the commission's recommendations effectively. As time went by, GAO worked with congressional staff in developing and revising many versions to incorporate the different aspects of information resource management into the act.

GAO, therefore, believes in the principles of Public Law 96-511, and invested its resources to support the Congress in passing it.

GAO will continue to invest resources to help bring about effective implementation of the act.

How GAO Views the Act:

GAO views the Paperwork Reduction Act as providing a framework for beginning Government-wide information and information resource management improvement efforts.

GAO believes that, with proper implementation, the act provides for integrating and applying all information technologies and methodologies, which if managed properly, will help reduce the cost of Government while assisting in accomplishing agency missions.

The underlying concept of the act is the management of information as a resource in much the same way that money, facilities, equipment, and people are managed.

The act involves economical and effective management of information itself, as well as the resources used to process and manage information.

The act covers the management of information in many forms, including paperwork, manual records, automated information, related automated technology (photography, word processing telecommunications, laser-driven printers, etc.) and archival activities.

GAO believes that information management improvements, possible under the proper implementation of the act, will result in more economical information related operations, less paperwork burden on the public, better Federal decisionmaking, improved services to the public, and an overall reduction of the cost of Government.

The increased expenditures for better information management will be offset many times by resultant savings.

What GAO Will Be Doing in the Future:

GAO, as stated earlier, has been in this business for many years (app. I to IV).

The act places responsibilities on OMB and the agencies for economical, efficient, and effective management of information resources and requires that (1) appropriate and consistent information management policies be established and implemented, and (2) the necessary structures be put into place to allow for the implementation of effective procedures, tools, and techniques for collecting, processing, using and disposing of information.

GAO will be heavily involved in assessing for Congress the progress made under the act. Reviews will focus on OMB and agency efforts to develop policies, establish organizational structures, and provide adequate resources for more economical and effective management of information.

Also, GAO will be looking to see if agencies are taking advantage of opportunities to apply information technology to reduce Government costs and improve service delivery.

GAO will be using the resources of all of its divisions, since nobody is a total expert in this area.

Accounting For Information Costs

Good Management Requires Cost Measurement:

Most resources which are managed effectively are assigned a value--normally, cost.

This includes the management of people, facilities and equipment, inventories produced or purchased, etc.

Cost, as a measurement of resources or assets, is required to (1) manage effectively the resource and its component parts, e.g. significance will determine how closely the resource and each of its parts should be managed, (2) plan and budget for its future use, and (3) prepare costs estimates for management decisions.

Information Has Measureable cost:

The act recognizes that information is not a free good. Information costs money to plan for (design and development), collect, transmit, convert, input, correct, process, store, output, use, and dispose of.

Costs attributable to this process include the cost of personnel employed in many functions, facilities containing the information processing operation, equipment and materials used, etc.

The 1973 article, "Cost of Information," pointed out that it would be difficult to manage information like other resources because an accounting mechanism didn't exist to measure its cost.

The article suggested asking certain questions about each information processing step to help identify potential problem areas (app. XI).

But this is recognized as less than adequate for total information management because the cost of each step is needed to determine (1) where management attention is needed most, (2) the elements of each step that need the most management attention, and (3) whether certain information activities should be continued.

Attempt to Measure Information Costs:

In 1980, the Federal ADP Users Group (FADPUG) initiated a project under the Information Resources Management (IRM) special

interest group for establishing a methodology for accounting or otherwise measuring information costs.

The objectives are to determine the costs of information and its elements for effective management of this resource.

Status of Project and Problems Encountered:

This is an ongoing project. Many problems exist, but they can be resolved.

Problems faced include:

--Jargon: different disciplines are merged and members have to deal with IRM, accounting, ADP, library and other jargon.

- (1) Information vs. Data
- (2) Historical cost accounting vs. Cost estimating
- (3) Meaning of "storage"

--The intangible nature of information: For example information can be used an infinite number of times and by many different organizations.

--Problems of end item allocation: Questions regarding how to allocate costs to dominant, subsidiary, and unplanned end products (output reports) exist.

--How to merge the proposed information accounting system into existing, traditional accounting systems.

--Methods of allocating system costs to information.

--Methods of determining how much time a person spends on "information" related functions for cost accounting purposes.

Resolution of these and other problems will require continued work as well as additional resources.

The end product will be a document containing suggested methodologies for arriving at information costs - both overall and the cost of its elements--for use in information management.

CLOSING

It is too early to determine the effectiveness of the Paperwork Act implementation.

There may be heavy emphasis on paperwork burden in the first years. Federal information management is also very important.

Total management commitment with application of the right kinds of resources after appropriate research is necessary.

Integrated management policy, guidelines, standards, and instructions are needed. These should be based on the research performed.

Management of information and related resources must be a continuing, not one-time, activity. If not, paperwork will grow again and information processing and management flaws will creep back in.

GAO considers the oversight requirements of the act to be equally important as other act requirements.

GAO will be studying implementation actions of OMB and the agencies as part of our ongoing audit and evaluation function.

Nobody is a total expert. We can all learn from experience, but we believe information management is one area where increased resources will save many times their cost.

The cost of information is high. It is higher than it should be and must be reduced by better management required by the act.

SELECTED GAO REPORTS ON
AUTOMATIC DATA PROCESSING PROBLEMS

<u>Report Number</u>	<u>Date</u>	<u>Title</u>
B-115369	05-16-74	Emphasis Needed on Governments' Efforts To Standardize Data Elements and Codes For Computer Systems
LCD-74-115	10-01-75	Further Actions Needed to Centralize Procurement of Automatic Data Processing Equipment to Comply With Objectives of Public Law 89-306
FGMSD-76-5	04-23-76	Improvements Needed In Managing Automated Decisionmaking By Computers Throughout The Federal Government
FGMSD-77-14	03-15-77	Problems Found With Government Acquisition and Use of Computers From November 1965 to December 1976
FGMSD-77-34	09-15-77	Millions In Savings Possible In Converting Programs From One Computer to Another
FGMSD-78-23	04-19-78	The Federal Information Processing Standards Program: Many Potential Benefits, Little Progress, and Many Problems
FGMSD-78-39	07-18-78	New Ways of Preparing Data for Computers Could Save Money and Time and Reduce Errors
LCD-78-123	01-23-79	Automated Systems Security - Federal Agencies Should Strengthen Safeguards Over Personal and Other Sensitive Data
FGMSD-80-35	06-03-80	Conversion: A Costly, Disruptive Process That Must Be Considered When Buying Computers
AFMD-81-9	12-15-80	Continued Use of Costly, Outmoded Computers In Federal Agencies Can Be Avoided

SELECTED GAO REPORTS ON PAPERWORKAND RECORDKEEPING PROBLEMS

<u>Report Number</u>	<u>Date</u>	<u>Title</u>
GGD-79-4	11-17-78	Federal Paperwork: Its Impact On American Business
GGD-79-70	09-24-79	Protecting The Public From Unnecessary Federal Paperwork: Does The Control Process Work
FGMSD-80-9	11-13-79	Outlook Dim for Revised Accounting System Needed for Changing Telephone Industry
GGD-80-14	03-10-80	Department of Agriculture: Actions Needed to Enhance Paperwork Management and Reduce Burden
GGD-80-36	03-14-80	Program to Follow Up Federal Paperwork Commission Recommendation Is In Trouble
LCD-80-68	06-23-80	Program to Improve Federal Records Management Practices Should Be Funded By Direct Appropriations
PLRD-81-2	02-24-81	Federal Records Management: A History of Neglect
GGD-81-32	03-03-81	The Trucking Industry's Federal Paperwork Burden Should Be Reduced
GGD-81-40	05-15-81	The Environmental Protection Agency Needs to Better Control Its Growing Paperwork Burden on the Public
AFMD-81-70	07-07-81	Independent Regulatory Agencies Can Reduce Paperwork Burden on Industry

SELECTED GAO REPORTS ON INFORMATION QUALITY

<u>Report Number</u>	<u>Date</u>	<u>Title</u>
B-178806	10-09-74	Problems and Progress of the U.S. Army Materiel Command's Automated Data Processing Service Center Concept
LCD-75-205	02-11-75	Need for More Effective Management of the Transportation Data Systems
HRD-76-159	11-18-76	Supplemental Security Income Payment Errors Can Be Reduced
CED-77-76	06-15-77	Food Stamp Receipts - Who's Watching the Money
FGMSD-76-82	11-07-77	New Methods Needed for Checking Payments Made By Computers
EMD-78-51	03-24-78	Shortcomings Found in Certain Data Systems of (DOE) During Natural and Propane Gas Shortages
PSAD-79-62	08-06-79	Better Information Management Policies Needed: A Study of Scientific and Technical Bibliographic Services
FGMSD-80-8	12-06-79	Errors in Health Benefit Enrollment Data Push Up Health Insurance Costs
FGMSD-80-42	04-30-80	Naval Supply Systems Command Acts to Improve Usefulness of Financial Reports Produced by the Aviation Supply Office's Automated Allotment Accounting System
FGMSD-80-49	06-10-80	The Marine Corps Military Pay Systems: Too Many Errors and Inefficiencies

SELECTED GAO REPORTS ON
INFORMATION RESOURCES MANAGEMENT PROBLEMS

<u>Report Number</u>	<u>Date</u>	<u>Title</u>
B-169857	09-11-74	Why Performance of Automatic Voice Network (AUTOVON) Service Needs Improvement
GGD-75-56	04-16-75	Resource Management Can Be Improved By Greater Use of Productivity Techniques
FGMSD-75-53	04-22-76	Uses of Minicomputers in the Federal Government: Trends, Benefits, and Problems
LCD-75-115	02-17-77	Improved Management Needed for Automated Information Handling Activities of Contract Administration
PSAD-78-112	07-10-78	Managing Weapon System Software: Progress and Problems
FGMSD-80-4	11-09-79	Contracting for Computer Software Development - Serious Problems Require Management Attention to Avoid Wasting Additional Millions
CED-80-18	03-10-80	Stronger Management of EPA's Information Resources is Critical to Meeting Program Needs
CED-81-15	10-23-80	Forest Service's Region 5 Should Consider Less Costly Ways to Meet Word and Data Processing Needs
AFMD-81-18	01-19-81	Increased Productivity in Processing Travel Claims Can Cut Administrative Costs Significantly
CED-81-116	06-19-81	Department of Agriculture Needs Leadership In Managing Its Information Resources

"Cost of Information"

FEDERAL INFORMATION COSTS (1973)

ESTIMATED COSTS

Data Collection	\$5.2 billion
ADP Equipment	\$1.0 billion
Direct ADP Personnel Support	\$1.0 billion
ADP Output	\$1.0 billion
Indirect ADP Personnel Support	\$4.0 billion
	<u>\$12.2 billion</u>

UNKNOWN COSTS

- Cost of Classified Systems
- System Design
- Portions of Manual Processing Systems
- Control and Mobile Computers
- Manual Correction of Errors
- Decisions, Processing, and Evaluations (User)
- Support of State and Local Systems
- DOD Weapons Systems
- Computer Security

Source: "The Cost of Information," "The GAO Review, Summer 1973"

AUTOMATED ACTIONS INITIATED
WITHOUT MANUAL REVIEW

(SELECTED SYSTEMS OF 15 FEDERAL
AGENCIES, 128 APPLICATIONS)

<u>Nature of output</u>	<u>Number cited</u>	<u>Total actions</u>	<u>Total monetary impact</u>
		(000 omitted)	(000,000 omitted)
Payment authorizations or checks to:			
Contractors or grantees	10	8,700	\$ 7,221
Members of the public	23	715,000	18,589
Government employees (other than payroll)	3	200	8
Bills sent to:			
Contractors	3	100	15
Government organizations	17	17,300	6,549
Members of the public	18	19,100	3,298
Purchase orders or supply requisitions	24	28,000	4,456
Directives to ship material	22	260,200	<u>a/2,500</u>
Directives to dispose of ma- terial	11	8,000	<u>a/56</u>
Production, repair, or rework schedules or instructions	12	191,300	<u>a/1,150</u>
Notifications to members of the public	21	22,200	N/A
Other	<u>48</u>	<u>447,300</u>	N/A
Total	<u>212</u>	<u>1,717,400</u>	

a/Represents the value of material on which these actions were taken. Information collected indicates that the transportation costs represent about 5 percent of the value of material shipped; the disposal costs about 3 percent of the material disposed of; and production, repair, or rework cost about 23 percent of the value of the material.

Source: Review of Computer Applications at 15 Selected Agencies
(GAO report, FGMSD-76-5, April 23, 1976)

CONDITIONS LEADING TO INCORRECT
ACTIONS BY AUTOMATED
DECISIONMAKING APPLICATIONS
 (32 INTERNAL AUDIT REPORTS)

<u>Category and condition</u>	<u>Number of agencies</u>	<u>Number of internal audit reports</u>	<u>Number of times condition was reported (note a)</u>
Software problems:			
Incomplete, erroneous or obsolete decision-making criteria,	7	14	30
Programing errors	5	10	10
Criteria or programing (note b)	5	11	14
Absence of needed edit checks	4	5	11
Data problems:			
Data elements incomplete	6	10	16
Data elements incorrect	5	17	30
Data elements obsolete	3	3	3

a/Each condition can occur more than once. Software problems, such as programing errors, may have occurred in more than one portion of the program or the condition may have been observed at more than one location, each designing its own program. The data conditions were based on the number of different data elements that were either incomplete, incorrect, or obsolete at least once.

b/Internal audit reports were not sufficiently detailed to arrive at an opinion as to whether the problem was in criteria or programing.

Source: Review of 32 Selected Internal Audit Reports Issued 1973 and 1974 (GAO report, FGMSD-76-5, April 23, 1976)

Summary of Causes of Data Problems

<u>Cause</u>	<u>Opinions of people answering the questionnaire --degree of causes (note a)</u>		<u>Identified from contacts with officials of Federal agencies (note b)</u>	<u>Cited as a cause by internal auditors</u>
	<u>Moderate to very large</u>	<u>Somewhat small or none</u>		
Forms designed and used for input preparation are too complex.	183	21	x	
ADP files are not always adequately reviewed to assure that good data is being used.	178	26	x	x
Instructions to people preparing data input are not always provided, are provided late, or are not adequate.	175	30	x	x
Preparers of data input are not always adequately trained.	159	46	x	x
Manual reviews of input documents are not always adequate.	144	61	x	x
High volumes of transactions cause input preparers to make errors (workload pressures).	131	73	x	x

a/The questionnaire presented "some possible causes of the data conditions (problems) * * * " and asked that "based on your data management experience * * * indicate the degree to which you believe each of these causes contributes to the data condition (problems) in general." The responses allowed were to a: very large degree, somewhat large degree, moderate degree, somewhat small degree, or very small degree, or not at all.

b/Our contacts were made with various organizational elements, excluding internal audit, within six agencies: the Department of the Navy; Department of Health, Education, and Welfare; Veterans Administration; National Bureau of Standards; National Archives and Records Service; and Civil Service Commission.

Summary of Causes of Software Problems

<u>Cause</u>	<u>Opinions of people answering the questionnaire-- degree of cause (note a)</u>		<u>Identified from contacts with officials of Federal agencies (note b)</u>	<u>Cited as a cause by internal auditors</u>
	<u>Moderate to very large</u>	<u>Somewhat small or none</u>		
Inadequate communications between the parties to software design	251	4	x	
Incorrect perceptions of the nature of actual transactions to be processed	233	22	x	x
Inadequate documentation preventing adequate reviews of software	229	28	x	x
Time constraints hampering the effectiveness of the design process	216	40	x	
Absence of written criteria or guidelines for designers to follow	204	49	x	
Detail and complexity involved in designing, coding, and reviewing software	177	79	x	x
Reliance on the expertise and experience of people doing the work (state of the art)	171	83	x	x
Undetected changes in circumstances making the application obsolete	167	90	x	x
State of the art in software testing which prevents testing all possible conditions	164	91	x	

a/The questionnaire presented "some possible causes of the design conditions (problems) * * *," and asked that "based on your software design experience * * * indicate the degree to which you believe each of these causes contributes to the design condition (problems) in general." The responses allowed were to a: very large degree, somewhat large degree, moderate degree, somewhat small degree, very small degree, or not at all.

b/Our contacts were made with various organizational elements, excluding internal audit, within five agencies: Department of the Navy; Department of the Air Force; Department of Health, Education, and Welfare; Veterans Administration; and National Bureau of Standards.

RESULTS OF ANALYSIS OF 100 GAO
REPORTS ISSUED IN THE LATE
1970's SHOWING DATA PROBLEMS

<u>Problems</u>	<u>Number of Reports</u>
Inaccurate information	60
Untimely information	39
Incomplete information	35
Duplicate information	23

SOME QUESTIONS TO ASKABOUT INFORMATION-PROCESSING STEPS

COST OF INFORMATION

Information-processing stepsSome questions to ask

Collecting

Is all the needed information being collected?
 Has needed information been collected elsewhere?
 Can this information be obtained in machine-sensible form for input into the system?
 Is the information current, accurate, and complete?
 Is unneeded information being collected?
 How is information being collected?
 Is there a better way?

Recording

Who records the information?
 Where?
 How Often?
 How is recording accuracy determined?

Transmitting

Where is the information sent?
 Should it be sent there?
 How is it sent?
 Is there a better way to send it?
 Should it be sent elsewhere?

Processing

What are the objectives of processing?
 Is the processing logical?
 Is it efficient?
 Are there processing steps that are not needed?
 Should there be additional processing steps?
 Is processing being performed as planned?

Output

What is the nature of the output?
 What data does it show?
 Is it used?
 How is it used?
 Is it shown elsewhere?

Analyzing and interpreting

What criteria exist?
 What instructions are given to personnel?
 Are the criteria and instructions adequate?
 Are they being followed?

Storing and retrieving

What means of storage and retrieval are used?
 How is information retrieved?
 Should it be stored?
 How long should it be stored?
 Is information that should be stored being disposed of?

(Cont.)

Information-processing stepsSome questions to ask

System design

How is the system being designed?
Is a feasibility study being made?
Are there existing systems to the same
type available? To what extent are
they being used in designing this system?
How is the design being coordinated with
management and operating personnel? Are
all of their needs being considered?

A NEW ERA FOR INFORMATION
MANAGEMENT - SOME ACTIONS PRECEDING THE ACT

- Public Law 89-306 (Brooks Act), 1965
- BOB Task Force of 1971
- "Cost of Information" 1973 ("GAO Review")
- Commission on Federal Paperwork 1974-77
- President's Reorganization Project 1977
- GAO Reports
- Legislation

SIGNIFICANCE OF FEDERAL INFORMATION COSTS

Significance Not Fully Measured

No accounting mechanism exists for measuring total information costs and its elements.

Information costs are buried.

Estimates of Information Costs

Some estimates and what they represent:

- GSA estimate (1972)
- NARS estimate (1973)
- Federal Paperwork Commission (1977)
- GAO employee (1981); informal estimate

FEDERAL INFORMATION PROBLEMS

Unreliable Information and Its Impacts

Report FGMSD-76-5 on "Automated Decisionmaking" discloses data quality problems:

- Scope of automated decisionmaking
- Example of adverse impact of poor data quality

--Causes of data problems

Recent study of use of ADP to support agency missions:

--100 GAO reports showing data quality problems

--More examples of impact

Information Processing Costs and Problems

Other problems create excessive costs:

--"Cost of Information" article

--GAO reports

--Other sources

Some examples of information problems observed:

--Collecting data already available

--Collecting unneeded data

--Inadequate processing of pertinent data

--Creating unnecessary output

--Failing to obtain and use needed data

--Other information processing problems

MANAGING FEDERAL INFORMATION - CONSIDERATIONS

Purpose of the Paperwork Reduction Act of 1980

Paperwork burden and its economic effects

Other very important requirements of the act

Responsibilities for Federal Information Management Policy

Comprehensive management required by the act

Policy required because of significant costs

Research is needed to develop information management criteria for policy development

Policy and procedures must be actively implemented

Definitions are needed

The Agency Senior Official

Responsibilities for selection by agency head

Management considerations

--Knowledge and Capability

--Organizational Placement

--Staff and Line Functions

--Review vs. Operations

--Responsibility and accountability

--Lines of Communication

--Management Commitment

Resources required

Audit and Evaluation

Definition of audit, evaluate and review

Self evaluation provisions of the Paperwork Act

Nature of the complex technology

Problems with past agency audits

Two GAO studies

Lessons learned from GAO studies

Role of the General Accounting Office

GAO Is Concerned With Economy, Efficiency, and Effectiveness of Government

GAO Played A Role In Assisting Congress In Enacting The Paperwork Reduction Act of 1980

GAO's View of the Act

What GAO Will Be Doing In the Future

Accounting for Information Costs

Good management requires cost measurement

Information has a measurable cost

FADPUG attempt to measure information costs

Status of project and problems encountered

--Jargon (IRM, ADP, accounting)

--Intangible nature of information

--Cost allocation problems

--Other problems

CLOSING

Too early to fully evaluate implementation

Heavy emphasis on paperwork

Total management commitment needed

Integrated policies needed

Continuing attention required

Oversight requirements important

GAO to study implementation

Savings from increased management of information